UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/984,059	12/03/97	SONG J	2743-0104P

002292 LMC1/0426
BIRCH STEWART KOLASCH & BIRCH
P O BOX 747
FALLS CHURCH VA 22040-0747

EXAMINER	
ALPHONSE, F	
ART UNIT	**PAPER NUMBER**
2775	11

DATE MAILED: 04/26/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/984,059	Jun IL Song
Examiner	**Group Art Unit**
Fritz Alphonse	2775

☒ Responsive to communication(s) filed on *Feb 7, 1900*

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-4, 6-8, 11, 12, and 16-38* is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-4, 6-8, 11, 12, 16, 19-23, 27, and 31-38* is/are rejected.

☒ Claim(s) *17, 18, 24-26, and 28-30* is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☒ The proposed drawing correction, filed on *Feb 7, 2000* is ☐ approved ☒ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

Response to Amendment

1. This is in response to applicant's amendment filed on February 7, 2000 in which claims 5, 9-10, 13-15 are canceled, claims 1-4, 6, 8, 11-12 are amended and claims 16- 38 are added.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on February 2, 2000 have been disapproved because they have not been signed by the Applicant. Therefore, the Applicant's signature is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 31-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Marcade (U.S. Pat. No. 4,646,528).

As to claim 31, Marcade (figs. 1-4) show a control system for an appliance, comprising: a user interface unit mounted on a door of said appliance (fig. 3); a control unit mounted on a body

of said appliance (see figures 1 and 2); and a serial communication line connecting said user interface unit and said control unit (col.3, line 38 through col.4, line 15), said serial communication line being disposed through a hole of a hinge of said door.

As to claims 32 and 33, Marcade (figs. 1-4) show a control system, wherein said appliance is a refrigerator; and wherein said user interface unit comprises: a display unit (34 a, b, c) displaying information about said appliance; and a key entry unit (36 a-j in fig. 2) allowing a user to enter appliance preferences or modes.

As to claims 34-35, Marcade (figs. 1-4) show a control system, wherein said user interface and control unit comprise a microprocessor (CPU 44 on col. 3, line 56 through col. 4, line 7; controller 42 in fig. 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4, 11-12, 16, 19, 21-23, 27 and 36, are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcade (U.S. Pat. No. 4,646,528) in view of Fowler (U.S. Pat. No. 5,616,269).

As to independent claims 1, 3 and 36, Marcade teaches a display unit (34 a, b, c in fig. 1 and fig. 2) of a refrigerator mounted on outer case of the refrigerator that receive signals

generated by the key buttons (36a-36j in fig. 2) and output the seven-segment LED displays decoded by microcomputer CPU 44 on col. 3, line 56-col. 4, line 7; and a microcomputer (controller 42 in fig.3) interpreting the sequence of the key input signals as a command to display the encoded values on col. 10, lines 23 -26.

Marcade teaches single lines (60 in fig. 3) connection between controller (42 in fig. 3) and display unit (62 in fig. 3), but does not mentioned that the single lines are a bi-directional data signal line adapted to transmit data between the display unit and the control unit in a serial manner.

Fowler teaches the method of serial communication protocol (an interconnected data signal line which corresponds to a bi-directional data line) to pass information between the display unit (display control module 25 in fig. 8B) and the controller (power module 26 in fig. 8B) through a serial line (27 in fig. 8B) on col.6, lines 41-50, and when the user enters the key, the information is converted into data that is communicated through the serial I/O port on col. 25, lines 50-54. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the refrigerator controller and display device of Marcade to add Fowler's serial communication protocol method so that the wiring can be reduced from twenty wires of parallel line to less than ten wires of serial line, and production cost can be saved a lot if the wiring connection is very long on col. 8, lines 15-26.

As to independent claims 11 and 12, Marcade teaches a external display device of refrigerator (see fig. 1) adapted to display an operating state of refrigerator (selected key

indicators 38 a-h, and temperature indicators 40 a-b in fig. 2) while enabling a key selection for controlling the refrigerator, comprising inputting the output data by the key buttons (36a-36j in fig. 2) on col. 3, line 56-58, decoding the data by microcomputer CPU 44, and executing a control based on the decoded data by the microcomputer (controller 42 in fig. 3) on col.10, lines 23-26.

Marcade teaches single lines (60 in fig. 3) connection between controller (42 in fig. 3) and display unit (62 in fig. 3), but does not mention that the single lines are the serial lines for the serial data. Also, Marcade does not mention the idea of converting the data into serial data and decoding the resultant serial data.

However, Fowler teaches the method of serial communication protocol to pass information between the display unit (display control module 25 in fig. 813) and the controller (power module 26 in fig. 8B) through a serial line (27 in fig. 813) on col.6, lines 41-50, and when the user enters the key, the information is converted into data that is communicated through the serial 1/0 port on col. 25, lines 50-54.

As to claim 2, Marcade teaches the display unit (34 a, b, c in fig. 1 and fig. 2) and the control means decodes the data by microcomputer CPU 44, and executing a control based on the decoded data by the microcomputer (controller 42 in fig. 3) on col. 10, lines 23 -26. Fowler teaches the method of serial communication protocol to pass infomation between the display unit (display control module 25 in fig. 813) and the controller (power module 26 in fig. 813) through a

serial line (27 in fig. 813) on col.6, lines 41-50, and when the user enters the key, the information is converted into data that is communicated through the serial 1/0 port on col. 25, lines 50-54.

As to claim 4, Marcade teaches the display unit comprises auxiliary control (LED driver 62 in fig. 3) means for receiving a command from the control (microprocessor 62 in fig. 3) unit, thereby executing an intermediate control until the operating state of the refrigerator is displayed on col. 3, lines 64-68.

As to claims 16, 19, 21-23, the claims have substantially the limitations of claims 11 and 12, therefore, they are analyzed as previously discussed in claims 11- 12 above.

As to claim 27, the claim has substantially the limitations of claims 11 and 12, therefore, it is analyzed as previously discussed in claims 11- 12 above.

8. Claims 6, 8, 20, 37 and 38, are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcade in view of Fowler as applied to claim 3 above, and further in view of Gaudet (U.S. PAT NO. 5,265,431).

As to claim 6, Marcade teaches a voltage supply line (VLED) on col. 3, line 66-col. 4, line 2.

As to claim 8, Fowler teaches a serial line in sync. and Gaudet teaches a serial line in async., and it is well known in the art that serial communication uses a coordinated data stream that has start bit, control bit, data bit and stop bit.

As to claim 20, the claim has substantially the limitations of claim 8, therefore, it is analyzed as previously discussed in claim 8 above.

As to claims 37-38, Fowler teaches a serial line comprising two data signal lines (serial input and serial output) and the clock signal in sync with "handshake" on col. 6, lines 41-48. Gaudet teaches a serial line comprising RS-232 line in asynchronous manner. However, "handshake" technique can be used for any serial line and it is capable of making simplex (sending data in one direction only), half-duplex (sending data in one direction at a time) or duplex transmission (sending data in both direction at the same time), and it is well known in the art.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcade in view of Fowler and Gaudet as applied to claims 3 and 5-7 above, and further in view of Admitted Prior Art (page 8, line 25-page 9, line 9; hereinafter simply referred to as APA).

As to claim 7, APA teaches that transmit signal lines connected between the control unit 20 mounted in the refrigerator body and the display device 20 attached to the outer surface of the door, through the hinge hole 31 of the hinge 30 on page 9, lines 1-4.

Allowable Subject Matter

6. Claims 17, 18, 24-26, 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments filed on January 7, 2000 have been fully considered but they are not persuasive.

a) Applicant argues that lines 60 of Marcade are not equivalent to the data line as claimed in claims 1 and 3.

However, line 60 of Marcade (fig. 3) which is coupled to LED (62) has the capability to control the display operation of a display unit and outputting the converted display control signal.

b) Applicant argues data lines 60 are not bi-directional.

Although Marcade does not explicitly disclose data lines 60, a bi-directional line, however, if it was not it would not be possible for the block 126 to determine whether the LED is energized by checking the status of lines 60.

c) Applicant argues Fowler does not disclose or suggest a single line that is connected to both inputs and outputs of both modules.

Fowler (fig. 8b) shows a single line (27) which is a serial output from the display control module 25 and a serial input into the display control module 25.

d) Applicant argues that independent claim 1 recites in part "determining whether a right of data transmission is assigned to the external display device or to a control unit"

This limitation is clearly disclosed by Marcade (col. 9, lines 40-45). One example is the disclosure of the block 126 which has the capability to determine the status of the output line 60.

e) Applicant argues the handshake protocol is used to enhance reliability of data transmission _ it is not used to determine which module has the right to send data.

However, the examiner disagrees since handshaking, in a digital communication system, is a method of error correction in which a receiver detects nonstandard or improbable character

sequences and instructs the transmitter to repeat them for double-checking before choosing the right ones.

f) Applicant argues that RS-232 line does not have a single line bi-directional capability.

Gaudet (fig.7) shows a single line RS-232 adapted to be interconnected in a bi-directional way. In addition, however, the use of a single bi-directional line is a design choice.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Juengel et al. (U.S. Pat No. 4,254,472) discloses a remote metering system for monitoring and displaying data generated by a plurality of metering devices.

Noda (U.S. Pat No. 4,418,262) discloses a programmable microwave oven with program display.

Aoki et al. (U.S. Pat No. 5,136,865) discloses a low temperature storage having N refrigeration units that may be used for independently refrigerating N chambers.

Heagle et al. (U.S. Pat No. 5,939,974) discloses a system for monitoring food service requirements for compliance at food service establishment.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 308-9051, (for formal communications intended for entry)

Or:

(703)308-6606 (for informal or draft communications, please label "PROPOSED" or "DRAFT"

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz Alphonse whose telephone number is (703) 308-8534.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached on (703) 305-9720.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

F. Alphonse

Art Unit: 2775

April 21, 2000

STEVEN J. SARAS
SUPERVISORY PATENT EXAMINER
GROUP 2700